

PERISTALTIC MIXING AND OXYGENATION SYSTEM

Abstract

[00114] The present invention provides devices and methods for achieving mixing and
5 gas exchange in chambers having a small volume. According to the invention a chamber
includes one or more walls that are made of a gas-permeable material and that include
multiple portions that are selectively deflectable into the interior of the chamber. The
deflectable portions are in communication with a hollow cavity or space that can be
pressurized. Pressurization results in deflection of the deflectable portion into the chamber.
10 Pressurization is achieved using a gas or fluid that contains a gas of interest such as oxygen.
The portions are deflected in a sequence that results in peristaltic action that mixes and
oxygenates the contents of the chamber. In a preferred embodiment of the invention the
hollow cavities are an assembly of tubes that deflect into a plurality of chambers. A
particular use for the invention is as a culture vessel for cells such as bacteria.

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